

REMARKS/ARGUMENTS

Favorable reconsideration of this application as currently amended and in view of the following remarks is respectfully requested.

Claims 1-23 and 26-30 are currently active in this case. Claims 1, 3, 16, 21, 26, 29, and 30 have been amended, by the current amendment. No new matter has been added.

A Terminal Disclaimer has been filed herewith in order to overcome the outstanding obviousness-type double patenting rejection. No further double patenting rejection is therefore anticipated.

The present invention (claim 1) is directed to a non-invasive imaging apparatus including a light irradiation unit configured to irradiate light generated by a light generating unit into a subject to be examined; a waveguide including a plurality of optical fibers, and configured to guide the light generated by the light generating unit to the irradiation unit; and a plurality of two-dimensionally arrayed electroacoustic transducer elements configured to convert acoustic waves from the subject into electrical signals. The plurality of electroacoustic transducer elements are vertically and horizontally arrayed with intervals of predetermined length provided therebetween in the vertical and horizontal directions, and the plurality of optical fibers are arranged in the intervals.

As a consequence of this configuration, the amount of air expelled between the array of transducer elements and the subject can be increased relative to the configurations of the prior art. Col. 10, lines 2-9 of the Specification. Further, volume data corresponding to a three-dimensional region representing a living body function can be acquired by a two-dimensional electroacoustic scanning process based on light irradiation from the irradiation unit and detection of the resultant acoustic waves generated by the electroacoustic conversion unit. See the Specification page 16 lines 1-11.

Similarly, claim 21 defines a plurality of two-dimensionally arranged electroacoustic transducer elements with intervals of predetermined length provided therebetween, and irradiation means arranged in the intervals. Claim 29 is directed to an apparatus for imaging tissue such as breast cancer in humans and defines the same configuration of the electroacoustic transducer elements and the plurality of optical fibers defined by claim 1. Similarly, claim 30 is directed to an apparatus for determining a distribution of the concentration of an analyte and also defines the configuration of the electroacoustic transducer elements relative to the plurality of optical fibers defined by claim 1.

Claims 16 and 26 define an imaging method including, among other steps, the steps of (claim 16) irradiating a subject to be examined with light containing a specific wavelength component using a plurality of optical fibers having two-dimensionally arranged light irradiation positions; and receiving, using a plurality of two-dimensionally arranged electroacoustic transducer elements integrated with the plurality of optical fibers, acoustic waves generated in the subject upon the irradiation of light. Claim 26 defines, among other steps, the steps of bringing a diagnostic probe including two-dimensionally arrayed ultrasound imaging elements and photoacoustic irradiation and detection elements integrated with the imaging elements into contact with breast tissue. Both claims 16 and 26 define the intervals of predetermined length where the optical fibers (photoacoustic irradiation and detection elements) are provided.

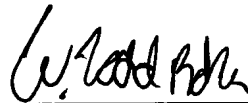
The advisory action maintains that “the manner in which the waveguide is positioned with respect to the transducers would have been a matter of design choice in the absence of any showing of unexpected result or criticality.” Applicants respectfully traverse. In *In re Soni*, 34 USPQ2d 1684 (Fed. Cir. 1995), the Federal Circuit permitted a showing or advantageous or superior results rather than unexpected results to rebut a prima facie case of obviousness. Further, because Kruger does not teach or suggest spacing the transducer

elements with intervals of predetermined lengths provided therebetween, and Figure 7 of Kruger illustrates a waveguide placed adjacent only to two acoustic sensors, Applicants respectfully submit that the prior art of record does not provide a reasonable expectation of success in accomplishing the claimed invention. Thus, no prima facie case of obviousness has been established, and the prior art rejections should be withdrawn.

In view of the foregoing no further issues are believed to remain. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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